

Mercury in gold mining: a Third World toxic threat

Michael Casey , The Jakarta Post , Kerengpangi, Kalimantan | Mon, 01/12/2009 12:33 PM



MINING GOLD: Traditional miners pan for gold at a mine in Hampalit, Central Kalimantan.
AP/Dita Alangkara

A gold miner stands waist-deep in a polluted pond, dumps a capful of mercury into a bucket of ore and mixes it in with his bare hands.

The darting liquid metal wraps itself around the gold to form a silver pellet the size of a marble.

The use of mercury in gold mining is illegal in Indonesia because it is toxic to both human health and the environment. But the price of gold has tripled since 2001, and mercury is the easiest way to extract it.

"Of course I'm worried," said miner Handoko, 23, a grim man in a baseball hat who goes by one name. "But this is the job."

Tens of thousands of remote mining sites have sprung up mostly in Asia, Latin America and Africa, using as much as 1,000 tons of mercury each year. The mercury ravages the nervous system of miners and their families. It also travels thousands of miles in the atmosphere, settling in oceans and river beds in Europe and North America and moving up the food chain into fish.

Small-scale gold mining is the second-worst source of mercury pollution in the world, after the burning of fossil fuels. And Indonesia ranks behind only China in the use of mercury in gold mining.

Mercury's impact is evident in mining regions like Central Kalimantan, on the island of Borneo. Acres of tropical forest are now virtual desert. Villagers say fish populations have dropped by 70 percent. The Galangan gold mining site stretches several miles, stripped of trees and dotted with mercury-laced ponds.

"This area is finished," said Fauzi Achmad, a gold shop owner, as he drove past the moonscape-like dunes and abandoned mine sites.

Despite the hazards, buying mercury at gold mining sites is as easy as purchasing toothpaste. The international trade in mercury is largely unregulated. And most of the 55 countries where small-scale gold mining is rife lack the political will or capacity to prevent the toxic metal from falling into the hands of 10 to 15 million poor miners.

"The continued use of mercury in gold mining threatens millions of people all over the world, since mercury is a global air pollutant," said Michael Bender, a coordinator for the Zero Mercury Working Group, a coalition of 40 groups worldwide that campaigns to reduce mercury use. "We're talking about a neurotoxin that science clearly shows threatens pregnant women, their fetus and those who eat large amounts of fish."



TOW, ROW YOUR BOAT: A traditional gold miner tows a boat at a mine on Takaras river in Kasongan, Central Kalimantan. AP/Dita Alangkara

The use of mercury in gold mining goes back thousands of years. The Romans forced slaves and criminals to extract gold and silver with mercury.

By the 20th century, mining companies had abandoned mercury in favor of chemicals like cyanide. But small-scale miners like it because it's easy to use, fast, cheap and leaves the gold cleaner than traditional panning.

"The miner cannot be separated from the mercury," said Achmad, the gold shop owner, who has campaigned to persuade miners to use less mercury. "With mercury, it makes the work fast."

Traders once relied on mercury from Spain, Algeria, China and Kyrgyzstan, but most mines are now shut and China only supplies its own market. So mercury comes from the leftover stockpiles of shuttered mines or the dozens of companies in Europe and the United States that recycle the metal from old light bulbs, batteries or industrial waste, according to the U.N. and the Zero Mercury Working Group.

Flasks of mercury worth hundreds of dollars are sold into an opaque and largely unregulated network of brokers who crisscross the globe, according to Peter Maxson, a Brussels-based

expert on the trade. They divert mercury supplied for legal purposes to the gold mines instead, where it can fetch prices 10 times higher than on the global market, he said.

"Countries import several hundred times the mercury they need for dental and other legal uses," said Pablo Huidobro, project manager for the U.N. Industrial Development Organization's Global Mercury Project. "The excess makes its way to the miners through the black market."

Maxson and other experts said it can be almost impossible to track the liquid metal as it passes through brokers and even criminal gangs on its way to a gold mine. A flask of mercury can originate in Spain, be sold to brokers in India, go on to popular transit points like Singapore or Vietnam and then get dumped in Indonesia.

The United States alone exported nearly 498 tons of mercury in 2007, up from 378 tons in 2006. It mostly was sent to Canada, Suriname, Hong Kong and Mexico, according to the U.S. Geological Survey.

"The whole trade has gone underground in the last five to 10 years. It's very secretive," Maxson said. "The companies dealing mercury won't tell you who their customers or even who the end users are."

Experts in the trade say D.F.G. Mercury Corp. and Bethlehem Apparatus are among the top suppliers of mercury worldwide. Robert Goldsmith, president of D.F.G. Mercury Corp. of Evanston, Ill., said he sells his mercury domestically but acknowledged it can be difficult to determine what happens to it. Bruce Lawrence, president of Bethlehem Apparatus in Hellertown, Pa., declined to discuss the trade. On its Web site, Bethlehem describes itself as a global supplier of prime virgin and high purity mercury.

Mercury traders say it's unfair to blame them for what happens at gold mining sites.

"If people don't want mercury to be used in artisanal gold mining areas, particularly in China, Indonesia and South America, then they should stop importing it," said Howard Masters, the managing director of Lambert Metals International, a British company that sells 25,000 to 30,000 flasks of mercury yearly worldwide.

"It is up to the governments themselves, as all imports into these countries are only allowable under license," he said. "But don't stop genuine consumption of mercury around the world, where it has very good uses and is not an environmental problem when used correctly."

Marc Claushuis, director of the Dutch firm Claushuis Metals, which sells 200 tons of mercury each year to Latin America, Africa and Europe, expressed frustration over his inability to control its use.

"Of course, I feel unhappy ... You send your end product to countries where you know it gets a lot of pollution," he said. "There is not so much you can do."

Once in Indonesia, mercury is trafficked through chemical shops in big cities like Surabaya or Jakarta and transported to mine sites in energy drink and vitamin bottles to avoid detection. It ends up behind the counters of gold shops in Central Kalimantan, Papua and North Sulawesi.

Indonesia periodically tears down illegal gold mining camps and slapped a ban on mercury use in mining three years ago, but mercury prices then doubled. Irwanto Thomas, a government environmental official in Central Kalimantan, acknowledged that mercury is widely used and will remain so until miners have better opportunities.

"They ask what job we can provide them," Thomas said. "Until now, the government has not

provided them with an answer."

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TOILING UP A GOLD LAND: Traditional gold miners use a high-pressure water jet to blast through soil at a mine in Hampalit, Central Kalimantan. AP/Dita Alangkara

The dusty main street of the Indonesian gold mining town of Kerengpang is lined with dozens of gold shops. It takes only a gentle inquiry to send a shop owner scurrying to a back room for the mercury.

"Sometimes, I sell mercury to the miners or just give it to them for free," said gold shop owner Rachmadi, who also trades gold for mercury.

Mercury is easily found at most mining sites worldwide. In Africa, miners buy it in small plastic bags stored in Tupperware containers or Vitamin C tubes. In Peru, it is sold in dental shops.

In gold mines, as much as one to three grams of mercury are lost for every gram of gold produced. But mercury is a slow and silent killer, so miners scoff at health concerns. They recall how they breathed mercury fumes or handled the toxic liquid for years with no problems. Some Indonesian miners have even smeared mercury on their skin in the belief it will make them stronger, according to a U.N. report.

"Sometimes the gold and mercury gets into my mouth," said Sumardianto, a jovial 36-year-old miner who has dug for gold in Central Kalimantan since 1996 and lives in a tented camp with his wife. "I'm OK. I don't have any illnesses. I don't worry about using mercury."

Numbers of people killed or disabled by mercury are impossible to nail down, experts say. But tests on miners in Indonesia, the Philippines, Colombia, Guyana, Zimbabwe, Tanzania and Brazil found mercury levels up to 50 times above World Health Organization limits, according to a 2006 U.N. report. Symptoms such as reduced motor skills, fatigue and weight loss are routine at mining sites, the U.N. said. Gold shop owners also breathe the mercury vapor they burn off.

The U.N. has spent \$7 million in six countries, including Indonesia, to educate miners and gold shops about mercury. The European Union agreed earlier this year to ban mercury exports from 2011. And President George W. Bush signed a bill in October sponsored by Sen. Barack Obama, now president-elect, that bans all elemental mercury exports by 2013.

Mercury recyclers argued that bans would promote the mining of more mercury and shift the export trade from Western countries to developing nations like India.

Already, 83 percent of mercury in the U.S. is believed to come from abroad, according to the U.S. Environmental Protection Agency, and 44 states have issued health advisories about eating contaminated fish.

"What is motivating governments at the highest level is a strong recognition that mercury is a global pollutant," said Kevin Telmer, an expert on small-scale mining at the University of Victoria in Canada. "It's clear that small-scale mining is adding to the global mercury problem."

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